



## REMARKS

1. Claims 1-4, 13-16, 21 and 28-31 were rejected under 35 U.S.C. § 102(b) as anticipated by Snyder.

2. Claims 5-11 and 17-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Snyder.

3. Although not explicitly stated, it appears from Examiner's remarks on page 3 of the Office Action that Examiner may have intended to include claim 12 among the claims rejected under 35 U.S.C. § 102(b). In addition, Examiner's remarks regarding claims 2-4, 12-16, 21 and 28-30 on pages 2-4 of the Office Action merely recite Applicant's claim language without any indication how these features relate to the grounds of rejection or to the cited reference.

Furthermore, Examiner's remarks regarding claim 22 on page 4 of the Office Action appear to be actually directed to claim 28, and Examiner's remarks regarding claim 28 appear to be actually directed to claim 31. Applicant has made a diligent effort to respond to Examiner's grounds of rejection as well as they can be understood from the Office Action. If Examiner wishes to clarify his position regarding any of the grounds of rejection, he is invited to do so in a supplemental Office Action.

4. Claim 1, as amended, distinguishes over Snyder by recitation of the novel and nonobvious features of:

a circuit for generating electrical pulses having a first output connected to said first electromagnet and a second output connected to said second electromagnet, said circuit configured *for selectively operating the vibration generator in a circular orbital vibratory mode, an elliptical vibratory mode and a reciprocating vibratory mode.*

Similarly, independent claim 28 distinguishes over Snyder by recitation of the novel and nonobvious features of:

a source of alternating current *configured to deliver alternating current to said first electromagnet at a first amplitude and to said second electromagnet at a second amplitude, thereby inducing an elliptical motion in said armature.*

As shown and described, the frictional welder of Snyder is configured to operate in an orbital (circular) vibratory mode or in one of three translational (reciprocating) vibratory modes. (See, for example, FIG 11.) Snyder does not disclose or suggest a circuit configured to or capable of operating the frictional welder in an elliptical vibratory mode.

Independent claims 1 and 28 are therefore submitted to be patentable over Snyder under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a). For these same reasons, dependent claims 2-21 and 29-31 are also submitted to be patentable over Snyder.

5. New claim 33 distinguishes over Snyder by recitation of the novel and nonobvious features of:

a circuit for generating electrical pulses having a first output connected to said first electromagnet and a second output connected to said second electromagnet, *said circuit configured to deliver electrical pulses to said second electromagnet at a variable phase angle with respect to said first electromagnet*, thereby inducing an orbital motion in said armature.

Snyder does not disclose or suggest a circuit configured to deliver electrical pulses to the electromagnets with a variable phase angle between the pulses. When operating in orbital (circular) vibratory mode, the frictional welder of Snyder operates with a three-phase electrical input that delivers electrical pulses to the electromagnets with a fixed phase angle between the pulses. When operating in translational vibratory (reciprocating) mode, the frictional welder of Snyder sends electrical pulses to only one of the electromagnets, therefore the concept of a phase angle between the pulses does not apply.

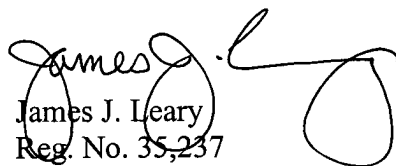
This claimed feature should not be confused with the discussion of the *load phase angle* in column 6 of Snyder. The *load phase angle* is a measured parameter of the frictional welder and not a control input. The *load phase angle* is a completely different concept and not related or analogous in any way to the phase angle between electrical pulses, which is precisely defined in applicant's claims and which clearly distinguishes over Snyder.

Claim 33 is therefore submitted to be patentable over Snyder under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a). For these same reasons, dependent claims 3, 30 and 32 are also submitted to be patentable over Snyder.

### CONCLUSION

For the reasons cited above applicant submits that all of the claims currently pending in this patent application define novel subject matter which is unobvious. Therefore allowance of such claims is submitted to be proper and is respectfully requested.

Very respectfully submitted,

  
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### CERTIFICATE OF MAILING

I hereby certify that this document and all of the papers referred to as enclosed herein will be deposited with the U.S. Postal Service as first class mail with sufficient postage, addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, on April 4, 2002.

Signature



Carol D. Titus

**COPY OF THE AMENDED CLAIMS  
WITH MARKINGS TO SHOW THE CHANGES MADE**

1. (amended) A vibrator apparatus comprising:

a base;

an armature plate resiliently mounted to said base;

an armature of magnetically attracted material mounted to said armature plate;

a first electromagnet mounted to said base in a spaced apart relationship to said armature;

a second electromagnet mounted to said base in a spaced apart relationship to said armature; and

a circuit for generating electrical pulses having a first output connected to said first electromagnet and a second output connected to said second electromagnet, said circuit configured for selectively operating the vibration generator in a circular orbital vibratory mode, an elliptical vibratory mode and a reciprocating vibratory mode [to deliver electrical pulses to said second electromagnet at a phase angle with respect to said first electromagnet, thereby inducing an orbital motion in said armature].

13. (amended) The vibrator apparatus of claim 1, wherein said circuit comprises a mode selector switch for selectively operating the vibration generator in [a] the circular orbital vibratory mode, [an] the elliptical vibratory mode and [a] the reciprocating vibratory mode.